III.   REMARKS

Claims 1-20 are pending in this application. No claims have been amended or cancelled. Applicant does not acquiesce in the correctness of the rejections and reserve the right to present specific arguments regarding any rejected claims not specifically addressed. Further, Applicant reserves the right to pursue the full scope of the subject matter of the original claims in a subsequent patent application that claims priority to the instant application. Reconsideration in view of the following remarks is respectfully requested.

In the Office Action, claims 1-5, 7-18, and 20 are rejected under 35 U.S.C. § 102(b) as being unpatentable under Liebmann et al (U.S. Patent No. 5,537,648).

With respect to claim 1, Applicant asserts that the claimed invention including the features recited in claim 1 fundamentally differs from Liebmann ('648), and accordingly is not unpatentable under the same. Liebmann ('648) teaches "a CAD system which is capable of receiving as input data *existing VLSI circuit designs* and automatically generating as an output phase shifted mask designs" (Col. 3, lines 43-46 (emphasis added)). Liebmann's phase shifted mask designs are automatically generated at the scale of an entire VLSI circuit at one time, as demonstrated by the flow charts in Figs. 1A, 1B, and 1C, as well as the diagrams of the VLSI circuits in various stages of completion in Figs. 2-17. Liebmann essentially begins with an already-existing VLSI circuit design, and creates ex post facto a phase shifted mask design based on that already-existing VLSI circuit. In contrast, claim 1 teaches a method by which the VLSI circuit layout is created, design object by design object, simultaneously with the creation of the alternating phase shift mask (the alternating phase shift mask is created "during design of the layout," *see* claim 1). The design objects are individual elements that are put together to create the VLSI circuit as a whole (*see* Specification, ¶ 0006 ("each design object includes a base shape

indicative of the feature to be ultimately created and two (2) different type phase shape identifiers that identify the requisite mask area and color of phase-shift required for that base shape.")), and are placed in locations specifically in accordance with compatibility of any overlapping phase shape identifiers: design objects are placed such that they overlap with other design objects "only in the case that the types of any overlapping phase shape identifiers are compatible" (claim 1, lines 11-12). As a result, the method is substantially more efficient than any disclosed in the prior art: "the addition or identification of phase-shiftable features using custom programs after layout (i.e., step (b) of FIGS. 1-2) is no longer necessary ... [and] extensive phase compliance checks and lengthy design modifications (i.e., step (d) in FIGS. 1-2) are eliminated." (Specification ¶ 006).

The differences between Liebmann and the claimed invention are also apparent in the phase shifted mask designs that are produced by the two respective methods. Liebmann's method unavoidably results in the production of phase shifted mask designs that feature areas of conflicting phase regions (*see* Figs. 10 and 17) as a result of the after-the-fact design of the phase-shifted mask. In contrast, the claimed invention results in the production of phase-shifted masks that never include any conflicting regions (*see* claim 1, lines 10-12 ("allowing placement of the design object overlapping another design object during design of the layout only in the case that the types of any overlapping phase shape identifiers are compatible.")). These materially different resulting masks evince a fundamental difference in the objects of Liebmann and the claimed invention. Due to these fundamental differences, and the distinct difference between the resulting phase-shifted masks produced by Liebmann and by the claimed invention, Applicant submits that Liebmann ('648) does not render the claimed invention unpatentable. Accordingly, Applicant respectfully requests that the rejection of claim 1 be removed.

With respect to claims 2-5 and 7, Applicant respectfully submits that dependent claims 2-5 and 7 are allowable for reasons stated above relative to independent claim 1, and for their own additional claimed subject matter. Accordingly, Applicant hereby respectfully requests that the Office withdraw the rejections under 35 U.S.C. § 102(b) to claims 2-5 and 7.

With respect to the rejections of independent claims 8 and 14, Applicant notes that each claim includes features similar in scope to those addressed above with respect to claim 1. Further, the Office relies on the same arguments and interpretations of Liebmann ('648) as discussed above with respect to claim 1. To this extent, Applicants herein incorporate the arguments presented above with respect to claim 1, and respectfully request withdrawal of the rejections of these claims for the above-stated reasons.
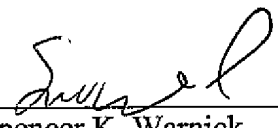
With respect to claims 9-13, 15-18, and 20, Applicant respectfully submits that these dependent claims are allowable for reasons stated above relative to independent claims 8 and 14, and for their own additional claimed subject matter. Accordingly, Applicant hereby respectfully requests that the Office withdraw the rejections under 35 U.S.C. § 102(b) to claims 9-13, 15-18, and 20.

In the Office Action, claims 6 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable under Liebmann et al. ('648) in view of Liebmann et al (U.S. Patent No. 6,057,063). Applicant respectfully submits that dependent claims 6 and 19 are allowable for reasons stated above relative to independent claims 1, 8, and 14, and for their own additional claimed subject matter. Accordingly, Applicant hereby respectfully requests that the Office withdraw the rejections under 35 U.S.C. § 103(a) to claims 6 and 19.

IV.   CONCLUSION

Applicant respectfully submits that the Application as presented is in condition for allowance. Should the Examiner believe that anything further is necessary in order to place the application in better condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number listed below.

Respectfully submitted,

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Date: 7/7/06   (JLM)

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